

ICC-ES Evaluation Report**ESR-3262**

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**DIVISION: 07 00 00—THERMAL AND MOISTURE
PROTECTION****Section: 07 18 13—Pedestrian Traffic Coatings****Section: 07 54 00—Thermoplastic Membrane Roofing****REPORT HOLDER:**

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EVALUATION SUBJECT:**TUFDEK® PROFESSIONAL SERIES WALKING DECK
AND ROOF SYSTEM****1.0 EVALUATION SCOPE****Compliance with the following codes:**

- 2009 *International Building Code*® (IBC)
- 2009 *International Residential Code*® (IRC)

Properties evaluated:

- Durability
- Wind resistance
- Impact resistance

2.0 USES

The Tufdek® Professional Series system is used as a covering in walking deck and nonclassified roof covering systems over concrete and plywood substrates.

3.0 DESCRIPTION**3.1 General:**

The Tufdek® Professional Series system consists of a reinforced PVC membrane, deck adhesives, deck leveling compound, liquid seam sealer and PVC coated G90 galvanized metal flashings for installation over concrete or plywood substrates.

3.2 Membrane:

The Tufdek® Membrane is a PVC single-ply, polyester-weft-scrim reinforced membrane complying with ASTM D 4434. The membrane has a nominal thickness of 60mils [0.060 inch (1.52 mm)] and is available in rolls measuring 63.5inches (1613 mm) wide by a nominal 360 feet (109.7 m) long. The membrane is available in various surface colors and has an embossed surface texture.

3.3 Adhesives:

3.3.1 Tufdek® I: Tufdek I is a water-based latex adhesive used for bonding Tufdek® Membrane to plywood substrates, and is available in 3.5-gallon (13.2 L) containers. Tufdek® I has a shelf life of one year when stored unopened in specified conditions.

3.3.2 Tufdek® II: Tufdek II is a solvent-based adhesive used for bonding Tufdek® Membrane to plywood and concrete substrates, and is available in 1-gallon (3.8 L) and 5-gallon (18.9 L) containers. Tufdek® II has a shelf life of one year when stored unopened in specified conditions.

3.3.3 Tufdek® Roll-On: Tufdek Roll-On is a water-based latex adhesive used for bonding Tufdek® Membrane to plywood substrates, and is available in a 3-gallon (11.3 L) container. Tufdek® Roll-On has a shelf life of one year when stored unopened in specified conditions.

3.4 Other Components:

3.4.1 Tufdek® Tuf-Patch: Tuf-Patch is a cement-based material used as a floor leveling compound on plywood and concrete substrates. Tuf-Patch is used to fill imperfections on substrates and is available in 10-pound (4.54 kg) pails. Tuf-Patch has a shelf life of 12 months when stored unopened in specified conditions.

3.4.2 Tufdek® Tuf-Clad PVC Flashing: Tuf-clad is No. 24 gage (0.022 inch), zinc-coated, galvanized [Z275 (G90)] steel sheet, laminated on one side with a 21-mil (0.53 mm) PVC film compatible with Tufdek® Professional Series membranes. The Tuf-clad flashing is sheered and broken to form deck-edge drip flashing, inside wall flashing or any number of custom-designed clad details.

3.5 Substrates:

3.5.1 Plywood: Plywood substrates must be minimum 5/8-inch-thick (15.9 mm) exterior-grade plywood with tongue-and-groove edges, complying with United States Department of Commerce Product Standard PS-1 or PS-2.

3.5.2 Concrete: Concrete substrates must comply with the requirements of the applicable code and have a minimum compressive strength of 2500 psi (17 238 kPa).

3.6 Impact Resistance:

The Tufdek® Professional Series system described in this report meets requirements for impact resistance based on testing in accordance with FM 4470.

4.0 INSTALLATION**4.1 General:**

The Tufdek® system must be installed by applicators trained and approved by Tuff Industries, Inc., in accordance with the manufacturer's published installation

instructions, the applicable code and this report. The installation instructions must be available on the jobsite during application. Installation is limited to conditions where the weather is dry and the ambient air temperature is a minimum of 50°F (10°C) when using the Tufdek® I adhesive or 40°F (4°C) when using the Tufdek® Roll-On adhesive or Tufdek® II adhesive. Materials must not be applied if precipitation is occurring or expected.

4.2 Preparation of Substrates:

Substrates must be structurally sound, clean, dry and free of dust and other material contamination at the time of application and must be sloped a minimum of 1/4 inch per foot (2 percent slope) for proper drainage. The Tuf-clad drip flashing is fixed to the deck-edge perimeter using corrosion-resistant ring shank nails spaced at 2 inches (51 mm) on center. Flashings must allow the free flow of water over the deck edge.

4.2.1 Plywood: Plywood must be applied to framing in accordance with the requirements of the applicable code. All unsupported edges must be blocked. All penetrations through and terminations of the sheathing must be protected with metal flashing in accordance with the requirements set forth in the applicable code and the manufacturer’s published installation instructions. Any loose materials must be removed and all plywood seams, knot holes and uneven areas must be filled with Tufdek® Tuf-Patch floor leveling compound in accordance with the manufacturer’s published instructions.

4.2.2 Concrete: Surfaces must be clean and free of standing water. All holes, joints and cracks must be filled and sanded flush with Tufdek® Tuf-Patch floor leveling compound; large areas can be repaired with portland cement mortar and all high spots cut or ground off to provide a smooth, even surface. Any foreign material such as paint, grease or oil must be removed by mechanical means.

4.3 Membrane Installation:

The Tufdek® Membrane must be adhered to the substrate with Tufdek® I, Tufdek® Roll-On or Tufdek® II adhesive. All adhesives must be applied to a clean, dry substrate area in accordance with the manufacturer’s published installation instructions. Seams in the membrane and joints between the membrane and flashing must be heat-welded.

Tufdek® I is applied to plywood substrates with a notched trowel at an application rate of 130 square feet per gallon (3.18 m²/L). Tufdek® Roll-On latex adhesive is applied to plywood substrates with a roller at an application rate of 160 square feet per gallon (3.92 m²/L). The adhesive is applied over the entire substrate, including the deck flashing described in Section 3.4.2, to within 1 inch (25.4 mm) of the deck edge. The membrane is folded or rolled into the wet adhesive allowing for transfer of the adhesive to the back of the vinyl sheet.

Tufdek® II contact adhesive is applied to the back of the membrane and to the plywood or concrete substrate at an

application rate of 100 square feet per gallon (2.45 m²/L), allowing for an adhesive tack time of 15 to 45 minutes. Once the adhesive on the membrane and substrate is tacky to the touch, the first half of the membrane is rolled or folded onto the substrate using a rubber roller and, working from the center of the membrane sheet outward, taking care not to leave wrinkles or air pockets. The same procedure is followed for the second half of the membrane.

Following the initial application, the entire membrane is rolled using a 70-pound (32 kg) steel roller to ensure complete contact with the substrate and the elimination of any air pockets.

4.4 Wind Resistance:

The allowable wind uplift pressures are noted in Table 1 of this report.

4.5 Method of Repair:

The damaged area must be clean and dry, and all existing damaged membrane must be removed. The membrane must be replaced in the same manner as described in Section 4.3.

5.0 CONDITIONS OF USE

The Tufdek® Professional Series walking deck and roof covering system described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 Installation must comply with this report; the manufacturer’s published installation instructions and the applicable code. If there is a conflict between the installation instructions and this report, this report governs.
- 5.2 Use of the system in roofing applications is limited to buildings permitted to have nonclassified roofing.
- 5.3 The deck on which the membrane is installed must be designed to resist the design wind pressures of the applicable code.

6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the ICC-ES Acceptance Criteria for Walking Decks (AC39), dated April 2011.
- 6.2 Data in accordance with the ICC-ES Acceptance Criteria for Membrane Roofing Systems (AC75), dated July 2010.

7.0 IDENTIFICATION

Each roll of membrane is identified with the report holder’s name (Tuff Industries, Inc.) and address, the product name, the date of manufacture, and the evaluation report number (ESR-3262).

Each container of adhesive is labeled with the report holder’s name (Tuff Industries, Inc.) and address, the product name, the batch number keyed to the date of manufacture, and the product expiration date.

TABLE 1—WIND UPLIFT RESISTANCE

| SYSTEM NO. | SUBSTRATE ¹ | ROOF COVERING | ADHESIVE ² | ALLOWABLE WIND UPLIFT (psf) |
|------------|------------------------|----------------|--|-----------------------------|
| 1 | Concrete | Tufdek® system | Tufdek® II | 630.0 |
| 2 | 5/8-inch plywood | Tufdek® system | Tufdek® I, Tufdek® II or Tufdek® Roll-On | 170 |

For SI: 1 inch = 25.4 mm, 1 psf = 0.0479 kPa.

¹Plywood deck joints must be filled and leveled using Tuf-Patch leveling compound as specified in the manufacturer’s published installation instructions.

²Membrane adhesive application rates must be as noted in Section 4.3 of this report.